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A 38-year-old man was transferred to our institution for percutaneous closure of an atrial septal defect (ASD). The TEE echocardiographic examination performed at the referring institution reported the presence of an uncomplicated ostium secundum ASD with adequate rims for percutaneous closure with an Amplatz device. A repeated transoesophageal examination using the Matrix 3D TEE probe (Philips Healthcare, Andover, MA, USA) revealed a fenestrated ASD with four distinct orifices with insufficient rims for percutaneous closure (Figure 1A). This unusual ASD morphology could only be seen after cropping of the zoom acquisition. In view of these findings, the operative team decided to cancel the percutaneous procedure due to the high likelihood of failure.

This patient underwent surgical closure of his ASD, and the intra-operative findings were consistent with the 3D reconstruction exhibiting a fenestrated interatrial communication with four holes (Figure 1B).

Supplementary data are available at European Heart Journal – Cardiovascular Imaging online.

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Figure 1 (A) Real-time 3D TEE from right atrium perspective revealed a multiholed atrial septal defect (4) with various shapes and poor border quality. (B) The surgery image showing multiholed atrial septal defect (4) with perfect correlation with the real-time 3D TEE image. ASD, atrial septal defect; IVC, inferior vena cava; SVC, superior vena cava.